



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,824	09/23/2003	Cai-Zhong Jiang	MBI-0034CIP	2629
47334	7590	07/09/2007	EXAMINER	
MENDEL 2 C/O MOFO SF 425 MARKET STREET SAN FRANCISCO, CA 94066			KRUSE, DAVID H	
			ART UNIT	PAPER NUMBER
			1638	
			MAIL DATE	DELIVERY MODE
			07/09/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/669,824

Applicant(s)

JIANG ET AL.

Examiner

David H. Kruse

Art Unit

1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 22-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/23/03 & 3/5/07 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date  
:2/17/04;8/11/06;10/20/06;10/23/06.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group VII in the reply filed on 5 March 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR § 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR § 1.48(b) and by the fee required under 37 CFR § 1.17(i).

### ***Drawings***

3. The petition filed on 23 September 2003 under 37 CFR § 1.84(a)(2) requesting entry of color photographs and color drawings is granted.

### ***Priority***

4. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. § 119(e) or under 35 U.S.C. § 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. § 120 as follows:

The later-filed application must be an application for a patent for an invention, which is also disclosed, in the prior application (the parent or original nonprovisional

Art Unit: 1638

application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. § 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed applications listed in the claim of priority fail to provide adequate written description support or enablement in the manner provided by the first paragraph of 35 U.S.C. § 112 for one or more claims of this application. The priority for the instant claims is given the filing date of the instant application 23 September 2003. If the Applicants feel the Examiner is in error then Applicants should point out where in each of the prior filed applications each of the claim limitations can be found.

### ***Claim Objections***

5. Claims 25, 30, 36 and 41 are objected to under 37 CFR § 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. There is no indication in the specification that the instant claims would further limit the claim upon which they depend, they appear to be directed to subject matter that overlaps in scope with that of the claim they depend from, but are not completely encompassed by the broader claim.

### ***Double Patenting***

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

Art Unit: 1638

unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 22-42 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No. 6,717,034, having inventor Jiang Cai-Zhong in common. Although the conflicting claims are not identical, they are not patentably distinct from each other because the species SEQ ID NO: 1 encoding SEQ ID NO: 2, designated G1073, renders obvious the invention of the instant claims, the characteristics recited in instant claims for the G1073 clade transcription factor is inherent to SEQ ID NO: 2 of the '034 patent, as well as the function of increased tolerance to an abiotic stress.

8. Claims 22-42 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 7-40 of copending Application No. 10/870,198. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims encompass

Art Unit: 1638

the same Glade G1073 transcription factors as that of the copending claims, hence the instantly claimed vector, plants and methods would be obvious.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

9. Claim22-42 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 48 of copending Application No. 11/435,388. Although the conflicting claims are not identical, they are not patentably distinct from each other because SEQ ID NO: 384 of the copending application is identical to SEQ ID NO: 14 of the instant application, hence the instantly claimed vector, plants and methods would be obvious.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Claim Rejections - 35 USC § 112***

10. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claims 25, 30, 36 and 41 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "conserved domain that is at least 63% identical in its amino acid sequence to a second conserved domain

Art Unit: 1638

consisting of amino acids 106-201 of SEQ ID NO: 14" is not adequately supported in the written description and is New Matter introduced into the claims.

12. Claims 22-42 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicants claim an expression vector, transgenic plant and method of making comprising a polynucleotide encoding an AT hook transcription factor polypeptide wherein the polynucleotide hybridizes to a nucleic acid sequence comprising SEQ ID NO: 13 under specific stringency conditions, or wherein the transcription factor polypeptide comprises a conserved domain that is at least 63% identical to the second conserved domain consisting of amino acids 160-201 of SEQ ID NO: 14, and wherein overexpression of the transcription factor polypeptide produces greater biomass or more tolerance to water deficit than a control plant.

Applicant describes SEQ ID NOs 2, 6, 10, 12, 16 and 18, which Applicants assert in the Responses filed on 5 March 2007 that these species fall within the genus encompassed by the claims.

Applicants do not sufficiently describe the claimed genus because neither the AT hook domain or the described second conserved domain appear to describe a structure that adequately describes the claimed function.



Hence, it is unclear that Applicants were in possession of the invention as broadly claimed.

It is recognized in the instant art that AT-hook (a type of HMG protein) proteins appear to play a role in transcription regulation by acting as accessory factors which influence the association of transcription factors with chromatin and act as transcription factor cofactors (Aravind *et al* 1998, Nucleic Acids Research 26(19): 4413-4421, page 4413, right column, 1<sup>st</sup> paragraph). The art teaches that AT-hook motifs seem to be auxiliary elements necessary for cooperation with other DNA-binding activities in the same or different proteins (Aravind *et al* 1998, page 4413, right column 2<sup>nd</sup> paragraph). Aravind *et al* 1998 teaches that the AT-hook is a short stretch of sequence similarity which makes it difficult to detect in conventional searches and discern scores which are statistically significant (page 4414, left column, 2<sup>nd</sup> paragraph). Aravind *et al* 1998 in Table 1 on pages 4415-4417 teach that AT-hook proteins have a wide variety of specific functions including enzymatic activity, positive and negative regulation functions, and chromatin structural functions. Reeves 2001 (Gene 277: 63-81) teaches that HMG/AT-hook proteins have many binding sites for accessory proteins toward the C-terminus of the protein from the first AT-hook domain at the N-terminus at Figure 2 on page 66. Reeves 2001 teaches that HMG/AT-hook proteins perform multiple biological roles, and interact with many transcription factors at Table 1 on page 71. What Applicants describe, as "a second conserved domain" appears to be artificial and does not describe a structural and functional genus as asserted by Applicant. Hence, it is unclear that Applicant was in possession of the invention as broadly claimed.

See MPEP § 2163 which states that the claimed invention as a whole may not be adequately described where an invention is described solely in terms of a method of its making coupled with its function and there is no described or art-recognized correlation or relationship between the structure of the invention and its function. A biomolecule sequence described only by a functional characteristic, without any known or disclosed correlation between that function and the structure of the sequence, normally is not a sufficient identifying characteristic for written description purposes, even when accompanied by a method of obtaining the claimed sequence.

***Claim Rejections - 35 USC § 102/103***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 22-24, 26-29, 31-35, 37-40 and 42 are rejected under 35 U.S.C. § 102(b) as being anticipated or in the alternative under 35 U.S.C. § 103(a) as obvious in view of Weigel *et al* 10 November 1999 (NCBI Accession No AAF07197) taken with the evidence of Weigel *et al* (April 2000, Plant Physiology 122: 1003-1013) and in further view of Fourgoux-Nicol *et al* 1999, Plant Molecular Biology 40 :857-872.

Weigel *et al* 1999 discloses the ESCAROLA AT-hook protein and that overexpression produces late flowering and modified leaf development (see *idem* under CDS, /note=). See also Table II on page 1008 of Weigel *et al* 2000. Applicant discloses that G1067 (SEQ ID NO: 4) corresponds to ESCAROLA at the paragraph spanning pages 90-91 of the instant application. Weigel *et al* 2000 disclose that the ESCAROLA phenotype could be maintained over several generations and could be established as homozygous lines (page 1010, left column, last paragraph). Applicants' own evidence shows that the plants disclosed by Weigel *et al* would inherently have tolerance to an abiotic stress, that being cold (page 91 of the instant application). At instant claim 22, for example, the limitation "having increased biomass" is given it's broadest interpretation, hence it appears that the transgenic plant of Weigel *et al* 1999 would inherently having the claimed phenotype, without evidence to the contrary.

Fourgoux-Nicol *et al* (1999, Plant Molecular Biology 40 :857-872) teach the isolation of a 674bp fragment using a 497bp probe incorporating stringent hybridization conditions comprising three consecutive 30 minute rinses in 2X, 1X and 0.1X SSC with 0.1% SDS at 65<sup>0</sup>C (page 859, left column, 2<sup>nd</sup> paragraph). Fourgoux-Nicol *et al* also teach that the probe and isolated DNA fragment exhibited a number of sequence differences comprising a 99bp insertion within the probe and a single nucleotide gap, while the DNA fragment contained 2 single nucleotide gaps and together the fragments contained 27 nucleotide mismatches. Taking into account the insertions, gaps and mismatches, the longest stretch of contiguous nucleotides to which the probe could hybridize consisted of 93bp of DNA (page 862, Figure 2). In the present example, the

isolated fragment exhibits less than 50% sequence identity with the probe. Given the evidence of the prior art, it would appear that the ESCAROLA AT-hook protein encoding polynucleotide of Weigle *et al* 1999 and 2000 would meet the limitations of instant claims 22-24, for example.

Although Weigel *et al* 1999 and 2000 do not specifically teach a method of transforming a plant, such a method would have been *prima facie* obvious to one of ordinary skill in the instant art at the time of Applicant's invention. Transformation of plants with transgenes encoding plant genes was well established in the instant art at the time of Applicants' invention, especially transformation of *Arabidopsis thaliana*.

Failure of those skilled in the art to contemporaneously recognize an inherent property, function or ingredient of a prior art reference does not preclude a finding of anticipation, *Atlas Powder Co. v. IRECO, Inc.*, 190 F.3d 1342, 1349, 51 USPQ2d 1943, 1948 (Fed. Cir. 1999). The Office does not have the facilities and resources to provide the factual evidence needed in order to establish that the product of the prior art does not possess the same, material, structural and functional characteristics of the claimed product. In the absence of evidence to the contrary, the burden is on the Applicant to provide that the claimed product is different from those taught by the prior art and to establish patentable differences. See *In re Best* 562F.2d 1252 USPQ 430 (CCPA 1977) and *Ex parte Gray* 10 USPQ 2d 1922 (PTO Bd. Pat. App. & Int. 1989).

### ***Conclusion***

16. Claims 25, 30, 36 and 41 appear to be free of the prior art.
17. No claims are allowed.

Art Unit: 1638

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David H. Kruse, Ph.D. whose telephone number is (571) 272-0799. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached at (571) 272-0975. The central FAX number for official correspondence is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group Receptionist whose telephone number is (571) 272-1600.

DAVID H. KRUSE, PH.D.  
PRIMARY EXAMINER



David H. Kruse, Ph.D.  
25 June 2007

19. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.